

**JUNE 2002 ADDENDUM  
SAMPLING AND ANALYSIS PLAN  
BAYONNE BARREL AND DRUM  
NOVEMBER 1996**

*Prepared for:*  
**PRP Group / de maximis, inc.**

**June 21, 2002**

 **Quest Environmental & Engineering Services, Inc.**

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**BAYONNE BARREL AND DRUM SITE**

**NOVEMBER 1996**

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**Quest Environmental & Engineering Services, Inc.**  
**1741 Route 31**  
**Clinton, NJ 08809**

**June 21, 2002**

This document presents additions and revisions to the November 1996 *Bayonne Barrel and Drum Site Sampling and Analysis Plan* and the December 30, 1996 *Response to USEPA Comments* prepared by Blasland, Bouck & Lee, Inc. for implementation of sampling and analytical activities at Area of Concern (AOC) VII Buildings. The additions and revisions to each section of the Sampling and Analysis Plan (SAP) are provided below. The investigation in AOC VII will incorporate the sampling and analytical requirements specified in the November 1996 SAP, the December 30, 1996 *Response to USEPA Comments*, and this addendum.

## **Section 1.0 INTRODUCTION**

The objectives of the June 2002 Addendum to the SAP are:

- Characterize the soil in AOC VII: Northern Building Complex, which was not previously sampled;
- Investigate the vertical extent of historic fill in AOC VII; and
- Provide information to determine whether the remedial actions appearing in the February 25, 2002 draft Statement of Work are applicable to AOC VII.

Laboratory and applicable Quality Assurance/Quality Control (QA/QC) procedures for the collection of samples within AOC VII are discussed in separate documents entitled the Quality Assurance Project Plan (QAPP) [Blasland, Bouck & Lee (BBL), November 1996] and the June 2002 QAPP Addendum. A site-specific Health and Safety Plan identifying the health and safety procedures, methods and requirements for activities to be performed during this investigation is provided in a separate document entitled *Health and Safety Plan for Bayonne Barrel and Drum Soil Sampling Program*, June 2002.

## **Section 1.1 Site Background**

Sampling conducted during various investigations by Dan Raviv Associates (1986), Louis Berger and Associates (1986), USEPA (1994-1995) and Blasland, Bouck & Lee, Inc. (1997) provides a baseline of expected constituents of concern present in the fill and as a result of operations of the Bayonne Barrel and Drum Company. The following is a list of constituents of concern, based on the prior assessments, which were selected for sample analysis in the northern building complex:

- Petroleum Hydrocarbons
- Volatile Organic Compounds
- Pesticides
- PCBs

- Polycyclic Aromatic Hydrocarbons
- Dioxins
- Metals

Earlier assessments attributed many of the remaining contaminants of concern to the historic fill used to elevate the grade of the site prior to Bayonne Barrel and Drum operations. Fill, attributed to and designated as the 15 E Sanitary Landfill, is present on the southern two-thirds of the site and surrounding properties, and fill potentially from PSE&G, consisting of coal-fired ash and cinders, is present on the northern portion of the site.

The area of land where the buildings are located was filled prior to 1931. The site was reportedly used as a leather tannery prior to the drum reconditioning use. There are currently nine buildings on-site; however, there have been prior buildings. Reported explosions and fires may have resulted in removal/alteration or reconstruction of prior buildings. The following is a brief description of each existing building:

| <u>Building Number</u> | <u>Floor Area (sq. ft.)</u> | <u>Estimated Construction Date</u> | <u>Description/Use</u>   |
|------------------------|-----------------------------|------------------------------------|--|
| 1                      | 29,000                      | Late 1950's                        | Concrete block building used for reconditioning of closed head drums, and for shot blasting open and closed head drums |
| 2                      | 2,250                       |                                    | Drum staging building for preparation for the furnace  |
|                        | 760                         |                                    | Furnace for the cleaning of drums  |
| 3                      | 14,000                      | Prior to 1940                      | Concrete and brick building used to receive open head drums immediately after cleaning in the furnace                  |
| 4                      | 20,000                      | Late 1950's                        | Transite and steel building used for the reconditioning of open head drums   |
| 5                      | 4,000                       | 1960's                             | Paint storage building   |
| 6                      | 5,400                       | Prior to 1940                      | Office building  |
| 7                      | 9,300                       | Prior to 1940                      | Machine shop and maintenance garage  |
| 8                      | 2,400                       | Late 1960's                        | Boiler House   |
| 9                      | 1,750                       |                                    | Service Building   |

Prior sampling (Dan Raviv & Associates, 1986) was limited in scope in the building complex due the potential interference with ongoing operations and inaccessibility. Sampling was conducted in the

Furnace Area and the Petroleum Storage Area, which are within the building complex area. Dan Raviv & Associates (DR&A) had included this Area of Concern (AOC) as "VII Buildings". Results of building surface and sediment sampling indicated "significant concentrations". The operations in building numbers 1 and 4 involved closed and open head drum reconditioning with the potential to have discharges through cracks, seams and below grade sumps/pits. Many of the larger buildings were installed in the late 1950s through 1960 with smaller buildings added thereafter. Site operations began in 1934 in the immediate area of the buildings. The potential exists for contamination from these prior operations to be present below the buildings.

### **Section 1.2 Approach**

In accordance with the May 2002 Conceptual Sampling Plan for AOC VII Buildings, the soil characterization sampling and analysis efforts will focus on the northern building complex.

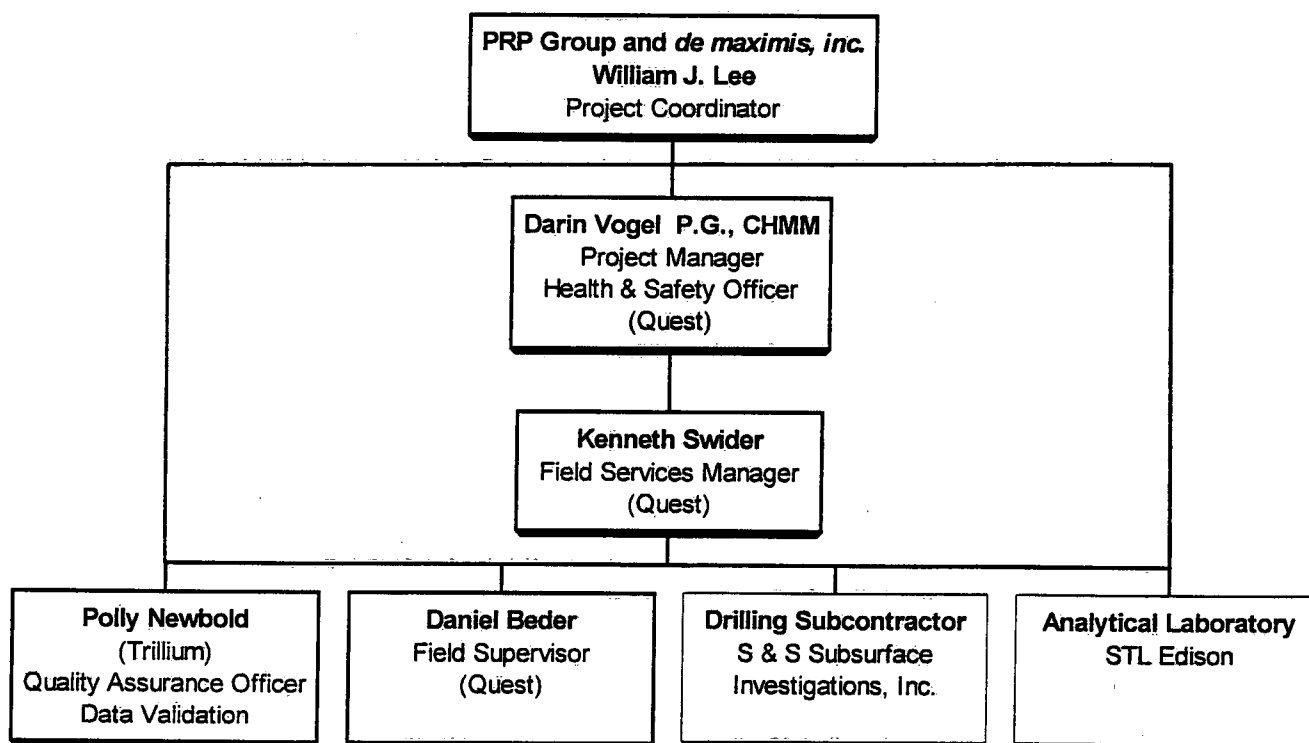
### **Section 1.3 Project Objectives (and subsections)**

(No Additions/Revisions)

### **Section 1.4 Project Organization**

The Project Organization Chart presented on the following page presents the relationships of the various parties involved in the sampling and analysis of AOC VII. William J. Lee will serve as the Project Coordinator for the Bayonne Barrel and Drum PRP Group and *de maximis, inc.* Darin Vogel P.G., CHMM, will serve as the Project Manager and Health and Safety Officer for Quest Environmental & Engineering Services, Inc (Quest). The field sampling team will consist of direction from Kenneth Swider and implementation of sampling activities by Daniel Beder. The Quality Assurance Officer is Polly Newbold of Trillium Inc (Trillium). S & S Subsurface Investigations, Inc. will be subcontracted through Quest to provide drilling services. The analytical subcontractor for this project is STL Edison in Edison, New Jersey.

**Project Organization Chart**  
**Sampling and Analysis Program**  
**Area of Concern VII Buildings - Bayonne Barrel and Drum Site**



### **Section 1.5 Project Schedule**

The work schedule for the AOC VII sampling and analysis provides a summary of the duration, and where possible scheduled start dates and scheduled finish dates for the activities.

| <b><u>Activity/Milestone</u></b>                                     | <b><u>Schedule/Duration</u></b>            |
|--|--|
| • Submittal of SAP to USEPA  | June 25, 2002                              |
| • Revisions based on USEPA Comments                                  | Within one week of receipt of comments     |
| • Notify USEPA   | One week prior to initiation of work       |
| • Initiate Field Work  | Within two weeks of USEPA approval         |
| • Completion of Field Work (includes preparation and demobilization) | Up to five days: July 22-26, 2002          |
| • Receipt of Analytical Data   | One week upon receipt of samples           |
| • Draft Report to <i>de maximis</i>                                  | Two weeks after receipt of analytical data |
| • Final Report to USEPA  | By August 30, 2002                         |
| • Final Data Validation Report to USEPA                              | September 20, 2002                         |

## **Section 2.0 SAMPLING and ANALYSIS**

(new section)

### **2.1.4 AOC VII - Buildings**

Soil samples will be collected to characterize the soils beneath the buildings within the 4-acre northern portion of the site. Sample locations will target areas having the highest potential for building floor penetration such as cracks, seams, floor drains, below grade sumps, etc. Sampling will also be performed to assess historic fill characteristics including the vertical extent of fill in the building complex area. The sampling will be conducted in accordance with the New Jersey Department of Environmental Protection (NJDEP) protocol for historic fill characterization. Earlier reports characterized the historic fill near this area as black silt, black coal ash and cinders with a thickness of approximately ten feet. The natural soil below the fill has been classified as fine to coarse, red to maroon-brown sands. Ground water is expected to be encountered at a depth of two to six feet below natural grade.

Sixteen borings will be completed within the building complex. Figure 1 illustrates the boring locations. All of the borings with the exception of boring BLDG7-1 will be completed within the buildings. Boring BLDG7-1 will be completed adjacent to the western end of Building 7 because this portion of the building is not accessible due to a collapsed roof. Borings will not be completed in Building 2 because Blasland, Bouck & Lee, Inc. (1997) previously investigated Building 2 and the Furnace Courtyard Area (FCA) in 1997. Borings also are not being completed in Building 6 (Office) and Building 9 (Service Bldg.) due to the historic operations at these locations.

Consistent with prior sampling, all locations proposed will have samples collected near surface. For this sampling event, the point of measurement of grade will be from the bottom of the concrete floor. For purposes of consistency with prior data collection of DR&A and BB&L, all samples will be labeled as two-foot soil samples. For the surface sample interval of 0-24 inches below the base of the building floor, the first eighteen inches of soil will be collected for analysis of Total Petroleum Hydrocarbons (TPH), Target Analyte List (TAL) metals, Target Compound List (TCL) semi-volatiles (SVOCs), PCBs, pesticides and PCDDs (dioxins). The 18-24 inch interval will be collected for analysis of TCL volatile organic compounds (VOCs). The entire soil core will be screened with a photoionization (PID) meter to assess the relative concentrations present. Should a discrete soil interval indicate significantly higher PID measurements than the proposed sample depth (one order of magnitude higher than the 18-24 inch interval), then the sample for VOC analysis will be collected



from the elevated PID location. At locations with ground water greater than five feet below the base of the building floor, a second two-foot sample will be collected above the water table for analysis of all the analytical parameters listed above. The sample collected for VOC analysis will be obtained from the six-inch interval above ground water unless the PID screening indicates a 6-inch interval having an elevated organic vapor reading. Based on prior BB&L data, it is estimated that approximately 25% of the locations may have a second sample interval collected for laboratory analysis. Each of the boring locations will be advanced to the depth of natural soil. Retrieved soil cores will be logged for soil type and other relevant characteristics (e.g. color, presence of organic material, staining, etc.) in accordance with Appendix E of the November 1996 SAP.

Analysis of PCDDs will be accomplished via laboratory screening using EPA Method 8270 with a 1-point calibration. The laboratory screening method has a detection limit of 33 ppb, which will be sufficient to determine whether or not dioxin exists at levels beneath the buildings to be considered a hot spot for treatment.

## **Section 2.2 Sampling and Equipment Procedures**

Soil samples collected for the investigation of AOC VII will be collected following the procedures described in Section 2.2.2 Subsurface Soils of the November 1996 SAP with the following revisions.

1. Soil samples will be collected using Geoprobe® 66DT track-mounted rig advancing two-inch diameter by five-foot long DT cores with single use acetate liners to prevent cross-contamination. The core liners will be contained within a five-foot long, stainless steel core barrel. The concrete floor at each boring location will be bored through using Geoprobe® rig and a hammer bit.

## **Section 3.0 SAMPLE HANDLING and ANALYSIS**

### **Section 3.1 Introduction**

The QA/QC procedures will also work in conjunction with the June 2002 QAPP Addendum.

### **Section 3.2 Sampling Containers and Preservation**

See revisions to Table 3 for sampling containers and preservation.

### **Section 3.3 Packing, Handling, and Shipping Requirements**

Packaged samples will be transported to STL Edison within 24 hours of sample collection.

### **Section 3.4 Sample Designations and Documentation**

All original documents, records, and information relating to the performance of the field work will be retained in a project file at the Quest office in Clinton, New Jersey.

#### **Section 3.4.1 Daily Production Documentation**

(No Additions/Revisions)

#### **Section 3.4.2 Sampling Information**

(No Additions/Revisions)

#### **Section 3.4.3 Sample Designations**

(No Additions/Revisions)

#### **Section 3.4.4 Field Equipment, Calibration, and Maintenance Logs**

(No Additions/Revisions)

### **Section 3.5 Chain-of-Custody**

The original Chain-of-Custody (COC) will accompany the samples to the laboratory and copies forwarded to the Quest Project Manager.

### **Section 3.6 Quality Control Samples**

Field blanks will be collected at a rate of one per day from re-usable sampling equipment (i.e. mixing bowl, spatula etc). Field blanks will be analyzed for all analytical parameters. Demonstrated analyte-free water obtained from the laboratory will be used for preparation of field blanks. Documentation as such will be provided by the laboratory.

Trip blanks consisting of methanol will be required for non-aqueous samples in accordance with the NJDEP methodology for the Field Extraction/Preservation of Soil Samples with Methanol for Volatile Organic Compounds, February 1997.

See the attached revised Table 2 regarding the frequency of field QC samples.

### **Section 3.7 Management of Investigation Derived Materials and Wastes**

(No Additions/Revisions)

#### **Table 1 Data Quality Objectives**

(No Additions/Revisions)

#### **Table 2 Data Summary of Planned Analyses**

See attached revised Table 2.

#### **Table 3. Sample Containers, Preservation and Holding Times**

See attached revised Table 3. Specific revisions include:

1. The method for TCL Volatile Organics will be SW846 8260 (methanol extraction/preservation).
2. The method for Pesticides/PCBs will be SW846 8082.
3. The screening method for PCDDs is SW846 8270 with a 1-point calibration.
4. Total Petroleum Hydrocarbons will be analyzed via EPA method 418.1m.
5. All other sample methods are the same as specified in Table 3 of the November 1996 QAPP

### **Appendix A Conceptual Sampling Plan**

Please see May 2002 Conceptual Sampling Plan for AOC VII Buildings.

### **Appendix B Surface Soil Sampling Procedures**

(No Additions/Revisions)

### **Appendix C Field Sample Packing, Handling, and Shipping Procedures**

Under Section III. Shipping

1. All samples will be hand delivered or delivered by an express carrier within 24 hours from the date of sample collection.

### **Appendix D Field Cleaning/Decontamination Procedures**

A power wash will be used for the Geoprobe® rig using the existing decontamination pad to collect rinsate. Reusable field soil sampling equipment including mixing bowls, spatulas, the Geoprobe® core barrels and drive shoes will be decontaminated using the following decontamination procedure:

1. wash with non-phosphate detergent and tap water;
2. rinse with tap water;
3. rinse with distilled water;
4. allow to air dry; and
5. wrap in aluminum foil, if appropriate.

Decontamination will be performed over plastic containers. All decontamination water will be drummed for eventual disposal.

### **Appendix E Procedures for Soil Boring Completion and Sample Collection**

Soil samples will be collected using Geoprobe® 66DT track-mounted rig advancing two-inch diameter by five-foot long DT cores with single use acetate liners to prevent cross-contamination. The core liners will be contained within a five-foot long, stainless steel core barrel. The concrete floor at each boring location will be bored through using Geoprobe® rig and a hammer bit.

### **Appendix F Photoionization detector (PID) Field Screening Procedures**

In order to ensure that there is sufficient sample for complete laboratory analysis of selected depth intervals, the field screening procedure will be modified from the headspace method described in the

November 1996 SAP. The modified field screening procedure using the PID is based on Chapter 7.5 (Subsurface Sample Collection) of the New Jersey Department of Environmental Protection *Field Sampling Procedures Manual*, May 1992.

#### Procedure

PID field instrument will be calibrated and operated to yield "total organic vapor" in ppm (v/v) as isobutylene. PID operation, maintenance, and calibration shall be performed in accordance with the manufacturer's instructions and entered in the field notebook.

Soil cores will be field screened upon collection using the PID for a relative measure of total volatile organic concentration as specified in Section 2.2.2 of the SAP. PID readings will be recorded in the field notebook or boring logs, whichever is appropriate.

1. Don personal protective equipment as required in the Health and Safety Plan.
2. Upon retrieval of the soil core assembly, expose the soil core by splitting the core liner using a utility knife or hook blade.
3. Using a pre-cleaned, stainless steel knife or spatula, make a cross-sectional slice along the soil core, or score a longitudinal line the length of the core deep enough to expose a porous surface.
4. Simultaneously place the probe of the PID into the opened area being careful not to touch the sample, or, move the probe slowly above the lateral scoring and record the results noting the depth intervals of the core.

## TABLES

**TABLE 2 ADDENDUM - SAMPLING AND ANALYSIS PLAN  
BAYONNE BARREL AND DRUM SITE  
NEWARK, NEW JERSEY**

**DATA SUMMARY OF PLANNED ANALYSES (including QC)**

| Parameter   | Environmental Sample Quantity<br>(Estimated No.) | Field QC Analyses |     |             |               |                 |     | Laboratory QC Sample |     |                   |     |               |     | Total |
|---|--|-------------------|-----|-------------|---------------|-----------------|-----|----------------------|-----|-------------------|-----|---------------|-----|-------|
|   |  | Trip Blank        |     | Field Blank |               | Field Duplicate |     | Matrix Spike         |     | Matrix Spike Dup. |     | Lab Duplicate |     |       |
|   |  | Freq.             | No. | Freq.       | Estimated No. | Freq.           | No. | Freq.                | No. | Freq.             | No. | Freq.         | No. |       |
| Soil  |  |                   |     |             |               |                 |     |                      |     |                   |     |               |     |       |
| TCL Volatile Organics + 10 TICs                           | 20   | NA                | 3   | 1/day       | 3             | 1/20            | 1   | 1/20                 | 1   | 1/20              | 1   | NA            | --  | 29    |
| TCL Semi-Volatile Organics + 20 TICs with a Dioxin Screen | 20   | NA                | --  | 1/day       | 3             | 1/20            | 1   | 1/20                 | 1   | 1/20              | 1   | NA            | --  | 26    |
| Pesticides/PCBs   | 20   | NA                | --  | 1/day       | 3             | 1/20            | 1   | 1/20                 | 1   | 1/20              | 1   | NA            | --  | 26    |
| TAL Metals  | 20   | NA                | --  | 1/day       | 3             | 1/20            | 1   | 1/20                 | 1   | 1/20              | 1   | 1/20          | 1   | 27    |
| Total Petroleum Hydrocarbons                              | 20   | NA                | --  | 1/day       | 3             | 1/20            | 1   | 1/20                 | 1   | 1/20              | 1   | NA            | --  | 26    |

**Notes:**

|       |   |
|-------|---|
| Dup   | Duplicate   |
| Freq. | Frequency   |
| NA    | Not Applicable                                      |
| No.   | Number  |
| PCBs  | Polychlorinated biphenyls                           |
| QC    | Quality Control                                     |
| TCL   | Target Compound List                                |
| TAL   | Target Analyte List                                 |
| TIC   | Tentative Identified Compounds via a library search |

# TABLE 3 ADDENDUM - SAMPLING AND ANALYSIS PLAN

## BAYONNE BARREL AND DRUM SITE NEWARK, NEW JERSEY

### SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES

| Parameter                            | Method <sup>(1)</sup>                     | Bottle Type   | Preservation  | Holding Time <sup>(2)</sup>                            |
|--------------------------------------|---|---|---------------|--|
| Soil                                 |   |   |               |  |
| TCL Volatile Organics + 10 TICs      | SW-846 8260                               | 40-ml VOA Vial with 25 ml methanol and Teflon®-lined lid. | Cool to 4° C. | 14 days to analysis                                    |
| TCL Semi-Volatile Organics + 20 TICs | SW-846 8270                               | 250-ml glass jar with Teflon®-lined lid.                  | Cool to 4° C. | 14 days to extraction, 40 days to analysis             |
| TCL Pesticides/PCBs                  | SW-846 8082                               | 250-ml glass jar with Teflon®-lined lid.                  | Cool to 4° C. | 14 days to extraction, 40 days to analysis             |
| PCDD (Dioxin)                        | SW-846 8270 (screening, 1-pt calibration) | 250-ml glass jar with Teflon®-lined lid.                  | Cool to 4° C. | 14 days to extraction, 40 days to analysis (screening) |
| TAL Metals (except mercury)          | SW-846 6010                               | 250-ml glass jar with Teflon®-lined lid.                  | Cool to 4° C. | 180 days to analysis                                   |
| Mercury                              | SW-846 7471                               |   |               | 28 days to analysis                                    |
| Total Petroleum Hydrocarbons         | EPA 418.1m                                | 250-ml glass jar with Teflon®-lined lid.                  | Cool to 4° C. | 28 days to analysis                                    |

#### Notes:

- (1) All methods are USEPA SW-846
- (2) Holding times are from date of collection.
- PCBs Polychlorinated biphenyls
- PCCD Polychlorinated dibenzo-p-dioxin
- TCL Target Compound List
- TAL Target Analyte List
- TIC Tentatively Identified Compounds via a Library Search

US Environmental Protection Agency. Office of Solid Waste and Emergency Response. Test Methods for Evaluating Solid Waste. SW-846 3rd ed. Washington,



## FIGURES

